



Over-confidence may reduce negotiation delay[☆]

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ABSTRACT

When a seller negotiates with multiple buyers, how does over-confidence affect the timing of trade? In this paper we distinguish between over-confidence about trade opportunities and over-confidence about the terms of trade. In bargaining environments without externalities both types of over-confidence can cause delays in agreement. If externalities are present the two forms of subjective bias have very different impacts on delay. In particular, over-confidence about trade opportunities may reduce bargaining delay.

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1. Introduction

It is common wisdom among economists, management scientists and legal scholars that negotiator over-confidence reduces concessionary behavior and generates bargaining delays. Intuitively, when negotiators are excessively optimistic about the shares they will get tomorrow, it may be impossible to find a settlement today that satisfies all parties' expectations.

This cause of bargaining delays is well known in law and economics¹ and in applied psychology (Bazerman and Neale, 1982, 1985). Only recently has game theory started exploring the connection between optimism and delay. Yildiz (2003, 2004) shows that excessive optimism may generate delays in finite horizon two-player negotiation games if the horizon is not too long. Ali (2006) shows that in multilateral bargaining games, extreme optimism may generate delays even in arbitrarily long finite games.

This paper studies how over-confidence affects negotiations between one seller and multiple buyers in the presence of multilateral externalities. We show that in these settings it is necessary to introduce a distinction between two different types of over-confidence. First, buyers may overestimate the likelihood of receiving an offer from the seller and be excessively optimistic about the opportunity to trade. Second, buyers may overestimate the content of the offer and therefore be excessively optimistic about the terms of trade. The main contribution of this paper is to show that, while over-confidence about the terms of trade tends to generate delay, over-confidence about the opportunities to trade may be beneficial and reduce negotiation delays.

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¹ Among others see Landes (1971) and Posner (1972).

To develop the intuition for this result, consider the following scenario. A noted scholar bargains for a tenured position with two universities located in the same geographical area. Each university would like to hire the scholar and prefers having the professor hired by the competitor to having him hired abroad. The scholar's decision has to be taken before a deadline; if no agreement is reached before the deadline, the professor will accept a job at a foreign university. Consider now the very last period before the deadline. At this point the scholar can extract from one of the two universities an amount of surplus that renders the school indifferent between hiring him and having him work abroad. Notice that in all previous negotiating periods he cannot extract as much surplus because he needs to compensate the negotiating counterpart for the positive externality arising if he signs at the competing institution. In other words, only in the last period does the threat of working abroad become real. Therefore, the presence of positive externalities gives an incentive to the scholar to delay the agreement. Assume now that the two universities overestimate the probability of hiring the scholar. In the extreme case, each school assigns probability zero of having the scholar work for the competing institution. In this case the scholar will not be required to compensate the school for the positive externality and will have no incentive to delay the agreement. This simple example illustrates how in environments in which there are externalities for non-traders over-confidence may reduce the externalities' impact and facilitate agreement.

Our theoretical model involves the trade of an indivisible object between one seller and N buyers in the presence of multilateral externalities and negotiation delay. There are several managerial applications that fit into this general framework.² One of these applications involves mergers and acquisitions. Usually, a merger of competing firms imposes externalities on the other firms in the industry. For example, if the industry becomes less competitive and more concentrated, the merger creates positive externalities for those not included in it. Empirical evidence described in Walsh (1989) shows extensive negotiations between the target company and its potential buyers.

Similarly, when a firm obtains a cost-reducing innovation protected by a patent, it imposes a negative externality on competing firms (Katz and Shapiro, 1986). The results in Jehiel and Moldovanu (1995a) suggest that bargaining delays may arise because of these externalities. Galasso and Schankerman (2010) provide empirical evidence of the existence of delays in the licensing process.

Finally, in various industries (e.g. automobiles) retailers negotiate exclusive dealings and agree to sell only one manufacturer's brand. Typically, an exclusive dealing allows the manufacturer to obtain a larger market share than its rivals and therefore it imposes a negative externality on competitors (Besanko and Perry, 1993).

Our results suggest that in all these settings over-confidence about trade opportunities and over-confidence about terms of trade may have different effects on bargaining delay.

The plan of the paper is as follows. Section 2 provides a simple example that illustrates how over-confidence may reduce settlement delays. Section 3 studies general finite horizon negotiation games with positive externalities. Extensions and robustness are examined in Section 4. Section 5 concludes. All proofs are in Appendix A.

2. A motivating example

Consider a large corporation, S , and two cities $i \in \{A, B\}$. The corporation is choosing where to locate its operations and it bargains with the cities over regulations and municipal ordinances in exchange for the resources it brings to their local economies. An example of such negotiations is the recent choice faced by General Motors of where to locate the first lithium-ion battery pack manufacturing facility in the United States. Early GM press releases indicated that the lab would be located in Michigan and that the exact location was subject to negotiations with state and local government authorities.³

For simplicity, we model these ordinances as a transfer from the city to the corporation. We study a bargaining procedure composed of two stages. In stage one the corporation makes a take it or leave it offer, p , to city A . If city A accepts the offer it transfers p to the corporation and the game ends. The utility of the corporation is given by p and the utility of the city is given by $1 - p$.

If city A refuses the proposal, the game moves to stage two. In this stage both cities have the same probability ($1/2$) of meeting with the corporation. If S meets i , then with probability $1/2$ the corporation will propose a transfer and with probability $1/2$ the city will make the offer. If city i accepts then it transfers p to the corporation and the game ends. All players discount the future with a common discount factor δ .

We solve this game (with no externalities and no subjective bias) using backward induction. Each city knows that in period two it will get a positive payoff only if it will be matched with the corporation and will be able to make an offer. This event happens with probability $1/4$. So in period one the corporation will offer city A a transfer $p = 1 - \delta/4$ in order to make the city indifferent between accepting and rejecting the offer. There will always be immediate agreement.

2.1. Subjective bias

Following Yildiz (2003, 2004) and Ali (2006), we consider an extension of the above bargaining game where it is common knowledge that city A overestimates its bargaining power. This subjective bias may be modeled in two ways. First, city A may

² For additional examples see Segal (1999) and Genicot and Ray (2006).

³ See GM press release on 12 January 2008. In June 2009 the company officially opened a 3000 m² battery lab in Warren, MI.

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